

Correspondence

Daptomycin susceptibility of methicillin resistant *Staphylococcus aureus* (MRSA)

Sir,

Methicillin resistant *Staphylococcus aureus* (MRSA) is an important cause of nosocomial and community acquired infections. There is a growing concern about MRSA with reduced susceptibility to vancomycin, which is currently the most extensively used antibiotic for its treatment^{1,2}. Many reports have stated discrepancies between *in vitro* susceptibility test results for vancomycin and clinical outcomes of MRSA infections treated with it³. This has made treatment of MRSA infections difficult due to limited antibiotic choices left. Thus, there is a need for evaluating newer agents as alternatives to vancomycin.

Daptomycin has been approved by Food and Drug Administration (FDA), USA in 2003 for the treatment of complicated skin and skin structure infections (cSSTI) and later for the treatment of *S. aureus* bacteraemia and right-sided endocarditis³. This drug causes myotoxicity and cannot be used in respiratory infections. In various clinical trials, daptomycin proved to be as effective as vancomycin against MRSA^{1,5}. We conducted this study to determine the *in vitro* activity of daptomycin against clinical isolates of MRSA obtained consecutively over a 6 month period beginning in January 2010. Sixty three MRSA, isolated from blood (33) and pus (30) in the department of Medical Microbiology, Post-graduate Institute of Medical Education and Research (PGIMER), Chandigarh, were included in this study. These isolates were identified using standard biochemical tests⁶ and by oxacillin screen agar⁷.

E-test was done to determine minimum inhibitory concentration (MIC) to daptomycin for these MRSA strains using E strips (AB BIODISK Solna, Sweden) on Mueller-Hinton agar supplemented with 50 mg/l calcium (Difco, USA) due to daptomycin's dependence on calcium. *S. aureus* ATCC 29213 was also tested concurrently for quality control. The isolates were

categorized as susceptible or resistant according to Clinical and Laboratory Standards Institute (CLSI) guidelines⁷.

The MIC value for *S. aureus* ATCC 29213 was within the range 0.25-1 µg/ml. All 63 clinical MRSA isolates were susceptible to daptomycin with MIC <1 µg/ml (Table). At present, MRSA accounts for more than 60 per cent of *S. aureus* infections⁸. Johnson and colleagues⁹ looked at the activity of daptomycin against multi-drug resistant isolates and found MIC for all organisms to be <1 mg/l. Daptomycin was also found active against strains resistant to linezolid and quinupristin/dalfopristin¹⁰. In one of the first reports from India¹¹, *in vitro* activity of daptomycin and selected comparator agents was studied against *S. aureus* and vancomycin resistant *Enterococcus faecium* (VRE) isolates recovered from hospitalized patients with SSTI. Daptomycin was the most active agent against both *S. aureus* (MIC₉₀, 1 µg/ml; 100% susceptible) and VRE (MIC₉₀, 4 µg/ml; 100% susceptible), highlighting the importance of the drug as an excellent therapeutic option.

Table. Distribution of the MICs for daptomycin determined by E-test for 63 isolates of MRSA

MIC (µg/ml)	No. of isolates
0.064	2
0.094	6
0.125	8
0.19	8
0.25	15
0.38	11
0.5	8
0.75	2
1	3
Total	63

Daptomycin was found to be highly active against all the MRSA isolates tested suggesting that daptomycin testing to be included in routine *S. aureus* susceptibility testing panel. It could be an alternative to vancomycin in the treatment of MRSA infections for which it is not possible to use it due to resistance or nephrotoxicity^{3,4}. Considering its safety profile and rapid bactericidal action, and also ease of administration with once daily dose, daptomycin may be useful for the treatment of severe infection caused by MRSA.

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